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[54] **NARROW BODIED, SINGLE- AND TWIN-WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS**

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Related U.S. Application Data

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[52] **U.S. Cl.** **235/472;** 235/462

[58] **Field of Search** 235/472, 462

[56] **References Cited**

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Article entitled "Needed: Better Quality Control for UPC", by Harrison & Swartz, Oct. 1976 edition, Food Engineering, pp. 61-63.

Reprint of article (Reference F), Packaging, p. 50, bearing the legend copyrighted 1976 Chilton Publication.

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[57] **ABSTRACT**

A narrow-bodied, single- and twin-windowed, hand-held, laser scanning head for reading bar code symbols includes at least one window mounted at the rear region of the head, and through which either the incident beam going to the symbol and/or the reflected beam returning from the symbol, passes unobstructedly and exteriorly of, and past, the front and intermediate body regions of the head. A field-replaceable laser tube arrangement, a laser tube and method of making the same, an arrangement for and method of controlling a scanning system, optical passive elements for increasing the depth of field, a trigger protective device, and a one-piece support bench and method of fabricating the same by mass-production techniques are also disclosed.

10 Claims, 19 Drawing Figures